



TREATISE
ON THE
BENEFICIAL EFFECTS
OF
COLD AND WARM BATHING;
WITH
AN APPENDIX;
CONTAINING
*Description of the Baths erected at Portobello,
near Edinburgh.*

This is the purest exercise of Health,
The kind refresher of the Summer heats:
Nor, when cold Winter keens the bright'ning flood,
Would I, weak-shivering, linger on the brink.
Thus Life redoubles,.....

Ev'n from the Body's purity, the Mind
Receives a secret sympathetic aid.—THOMSON.

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TO THE
SUBSCRIBERS AND MANAGERS
OF THE
PORTOBELLO BATH SOCIETY;
THE FOLLOWING TREATISE,
AS A SMALL TESTIMONY
OF THEIR SPIRITED AND PATRIOTIC EXERTIONS
IN PLANNING AND PROMOTING
AN INSTITUTION
OF GREAT PUBLIC UTILITY,
IS RESPECTFULLY
INSCRIBED BY
THE AUTHOR.

EDINBURGH, }
1st July 1807. }

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P R E F A C E.

IT was suggested to the Author of the following Observations, that a short Treatise, which should contain, within a narrow compass, some rules and directions for regulating the practice of Cold and Warm Bathing, would be acceptable and useful to the public. With this view the following Treatise was drawn up; in which will be found compressed all the material information on this subject which has been detailed in larger volumes, or scattered in different works.

It appeared that a system of bare rules, without stating the grounds on which they are founded, would have been to some less interesting, and to others altogether unsatisfactory. Hence it seemed necessary to enter into a wider field of discussion. Nothing, however, it is apprehended, has been advanced relative to the animal economy, which the intelligent reader will be at a loss to understand.

On some points the Author has ventured to express a very different opinion from what is entertained by writers on bathing; and one which is directly contrary to a very prevalent practice. This refers particularly to wetting the head; a practice which he has found, from long experience on his own person, and from the experience and observation of others, not only unnecessary, but in many instances prejudicial.

In the course of a transient visit to Portobello, after some years absence, the Author was struck with the re-

markable changes which had taken place, and the rapid and extensive improvements which every where met his view ; but he was peculiarly gratified with the progress of the establishment for bathing, which, under the excellent regulations by which it is conducted, promises to be of such essential benefit in promoting health and comfort. This led to the account of the institution, and the short history of Portobello in the Appendix.

It was once intended to have mentioned some of the cures which have been effected by the use of the warm bath. Some of these have been not a little remarkable. But this would have savoured so much of quackery, that it would not have been agreeable to the feelings of the Author, and he believes not more so to the Subscribers and Managers, who, as well as himself, he is persuaded, wish the prosperity of the institution to be founded only on its real utility.

A

TREATISE

ON

COLD AND WARM BATHING;

INTRODUCTION.

THE practice of bathing, either as a remedy in disease, or as a luxury, seems to have prevailed in all ages. Among ruder nations, and in the warmer regions of the earth, the cold bath has been more generally employed; but in more temperate climates, and in the progress of refinement and luxury, a feeble and enervated people, having experienced its grateful and invigorating effects, indulge more freely in warm bathing. And thus it appears, that in later times, the use of the warm bath became a principal gratification among the Greeks and Romans; and hence it is, that the magnificent ruins, which have resisted the waste of ages, and which mark the grandeur and extent of the establishments which were erected among the latter people, chiefly by rulers who sought popular applause, afford a striking testimony how much this luxury prevailed in the degenerate times of the Republic.

Bathing, with a view probably to its detersive effects, or as it contributes, by promoting cleanliness, to the health

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of the body, has been recommended in some countries by legislators and founders of peculiar systems of faith, and has thus assumed something of the form of a religious ceremony ; and hence its observance at stated times has obtained a place in the code of duties prescribed to some of the eastern nations.

The very general practice of bathing which prevails among all ranks of the inhabitants of this country, shows that the benefits which are derived from it are held in no small degree of estimation. The young and the old, the rich and the poor, the exhausted and the feeble, retire annually from the fatigues and business of the crowded city, to seek new vigour and refreshment on the shores, and at the watering places of the kingdom. This practice, which every returning season sees on the increase, can scarcely be supposed, as has been sometimes alleged, to be merely an amusement, or affording only a variety of scene and a change of society : its more general prevalence and continuance are certain proofs of some real benefits which attend it, otherwise the tide of fashion would ere now have turned into some other channel, and the practice itself would have long ago been neglected and disused.

Bathing, then, from the practice having prevailed in all ages, and from its use being so generally resorted to in this kingdom, must assuredly be of extensive utility. It must therefore be an important investigation to ascertain what are the real benefits to be expected from the practice of bathing ; and to know what rules should be observed to have the full enjoyment of these benefits. These topics constitute the objects of inquiry in the following observations : In which it is proposed, first, to consider the nature and use of *COLD BATHING* ; and, secondly, to treat of *WARM BATHING*.

CHAP. I.

OF COLD BATHING.

THE external application of cold water to the body, or cold bathing, were it the purpose of this treatise to enter deeply into the investigation, might be considered in two points of view ; either with regard to the deterative properties of the water, in removing from the surface of the body the impurities from the secreted matters, which, if allowed to remain on the skin, might be prejudicial to its proper action and to the health of the system ; or with regard to the effects of cold from the temporary diminution of the heat of the body, uniformly exposed by immersion to a colder medium. It is not improbable that the utility of cold bathing may consist in producing both these beneficial effects. But the present observations are too limited to admit of the discrimination of these advantages being pursued.

Some estimate might be formed of the value of cold bathing in contributing to the health and comfort of the body, if it be considered how much these beneficial ends are attained by a partial application of cold water in bathing or washing the face, hands, or feet ; and how greatly the whole frame is refreshed and invigorated even by this treatment of the extremities. The daily and universal practice of this partial system of bathing, is a sufficient proof of the benefits derived from it.

But, avoiding all minuteness of investigation, and as much as possible every thing like physiological discussion, the remarks which follow, will be limited to points

of practical utility, and will be employed in laying down directions for the beneficial use of the cold bath. With this in view, what is briefly to be offered may be arranged under the four following heads. 1. The proper time for bathing; 2. The state of the body when bathing should be employed; 3. The mode of bathing; and, 4. The diseases in which bathing may be useful.

SECT. 1. *Of the Proper Time for using the COLD BATH.*

OF those who have recommended cold bathing, some propose that it should be employed early in the morning, while others are strenuous advocates for delaying it till after mid-day. It may be observed, in general, that the proper time for bathing must depend on many circumstances, all of which ought to be fully considered before any precise rule can be given on this point. In sea-bathing, in many cases, the time is unavoidably in a great measure regulated by the time of the tide; but in other situations, and where the opportunity of artificial baths may be had, the time which shall be deemed most suitable may be easily determined.

In different situations of the tide, experience has shown that the temperature of sea-water considerably varies. When it is high water about two or three o'clock in the afternoon, it has been found that the temperature of the water is ten or twelve degrees higher than what is indicated by the thermometer at the time of low water, about eight o'clock in the morning of the same day.

The temperature of the sea admits only of variation in the time of calm weather. The agitation of the waters in a storm diminishes greatly the general temperature of the sea; for then the deeper water, which previously remained undisturbed, and at a distance from the influence of the

sun, is mixed with that at the surface ; and thus a uniformity of temperature is produced. But during the warm season of the year, and on a sandy beach, this variation of temperature is quite perceptible ; for it is found that sand not only absorbs, but also gives out heat with more facility than a gravelly or rocky bottom.

To the strong and healthy, it is of no great import to observe precautions with regard to the time of bathing, with the view of enjoying a few degrees higher temperature of the water ; but it is otherwise with those who expect the vigour of an enfeebled constitution renewed by the use of the cold bath. To them, therefore, it must be a piece of essential information to be told, that the temperature of a flowing tide about mid-day, or within an hour or two afterwards, is not less than ten or twelve degrees higher than at an earlier hour in the morning.

Early bathing is recommended by some, on the supposition that the body being exposed to a cold medium, while the stomach is loaded with a full meal, disturbs and retards the process of digestion, which requires the heat of the body to be kept up to the same uniform degree. But although it seems improper, and perhaps in some cases might be attended with hurtful consequences, to immerse the body, with a full stomach, in water far below its own temperature, this can never be urged in support of the practice of bathing immediately on leaving bed, or at an early hour in the morning. Persons of a feeble constitution, who bathe in the open sea, will do well to consider, not only the difference of temperature of the sea between the morning and mid-day, in particular circumstances alluded to above, but also the difference of temperature of the air at these different periods, and thus regulate the time accordingly.

It may be observed, in general, that as the air and the

water are inferior in temperature in the morning to what they are at noon, and as the body itself, from having had no exercise, and from the want of food, has not acquired the proper degree of heat, and may not be in that condition which will be afterwards pointed out, early bathing should be cautiously practised. This observation, however, is inapplicable to the use of the artificial cold bath at an early hour ; for there the temperature both of the air and water is nearly the same at all hours of the day.

Bathing in cold water, at an early hour in the morning, should be carefully avoided by those who have been previously subjected to severe fatigue, while the body is yet in an exhausted or debilitated state ; and it should be equally avoided by those who have indulged in any excess or intemperance, and before these effects have gone off. If the cold bath is to be employed in such cases, mid-day, when the air and water have reached their highest temperature, will be the most proper time for using it. Here it may be added, that the practice of returning to bed, after bathing in the morning, is hurtful. This is not unusual with children : but profuse perspiration is the natural consequence ; the debilitating effects of which more than counteract the invigorating effects of the cold bath.

The use of the cold bath in the evening, when the body has been exposed to exertion during the day, and is exhausted by fatigue, especially by those who have been in the habit of living generously and full, will, in general, be found to be prejudicial. If the healthy and the vigorous enjoy, after the cold bath in the evening, undisturbed repose during the night, the use of it may be continued ; but if copious perspiration in the night shall be the consequence of evening bathing, the practice ought to be relinquished.

SECT. 2. *Of the Previous Condition of the Body proper for COLD BATHING.*

THE use of the cold bath has been, in some cases, followed with much benefit; while in similar, or in the same cases, and apparently in the same circumstances, it has at other times failed of producing any salutary effects; or rather, on the contrary, these effects have been injurious. One thing, by which this difference may be accounted for, has probably been overlooked. This is the previous state of the body with regard to temperature and exertion. If the body have been exposed to severe exercise, and if this be followed by lassitude, debility, and reduced temperature, immersion in cold water will most assuredly produce very different effects from what may be expected from it when the body is in the full vigour of health, and its natural heat is undiminished. It need scarcely be added, that the consequences of inattention to the previous condition of the body, will be still more hurtful in proportion to the debility and delicacy of the constitution. From all this, therefore, it follows, that the state of the body, before the use of the cold bath, ought to be regarded as of the most essential importance; and the more so, as a practice in cold bathing, the very reverse of what is now to be recommended, and founded on erroneous opinions of the nature of the animal economy, is far from being uncommon.

Excepting by those whose professional pursuits require attention to the phenomena of animal life, or by those who are led by curiosity to study the same subject, it would scarcely be suspected that the variations of temperature of the human body, in the full vigour of health,

and in the violence of fever, in the time of the most active exertions, or debilitated with fatigue and languor, are limited to a very few degrees. But although these extremes, as they are indicated by the thermometer, are not far distant, yet the sensations which prevail when the temperature of the body is raised to the one, or depressed to the other, are very different. Now, it is when the heat of the body is at its lowest temperature that cold bathing should be avoided; for when the body is in this state, whether it proceed from exposure to cold, from exertion and fatigue, or any other debilitating cause, its effects, instead of being salutary, will most certainly be injurious: nay, it has sometimes happened that this necessary and prudent precaution being neglected, the consequences have been fatal.

It may be adopted as a general rule, that the condition of the body proper for immersion in the cold bath, is that in which, after being for some time in a warm place, or after moderate exercise, the temperature is in the highest extreme. And, indeed, although the body be in some degree of perspiration immediately previous to bathing, so far from any danger being apprehended, this state of the body may be regarded as the fittest for enjoying the salutary effects expected from bathing. It is not, however, to be understood, that immersion in cold water is here recommended when the body is in a profuse sweat. In some cases, even in this state of the body, the good effects of the cold bath might follow; yet as such a practice is not altogether without hazard, it is safer to avoid it entirely, lest the debility and languor which usually succeed should be induced before immersion, and thus all the injurious consequences of exposing the body to cold in this enfeebled state should be produced.

“ In the earlier stages of exercise (says Dr Currie),

before perspiration has dissipated the heat, and fatigue debilitated the living power, nothing is more safe, according to my experience, than the cold bath. This is so true, that I have for some years constantly directed infirm persons to use such a degree of exercise, before immersion, as may produce some increased action of the vascular system, with some increase of heat; and thus secure a force of reaction, under the shock, which otherwise might not always take place. The popular opinion, that it is safest to go perfectly cool into the water, is founded on erroneous notions, and is sometimes productive of injurious consequences. Thus persons heated, and beginning to sweat, often think it necessary to wait on the edge of the bath until they are perfectly cooled, and then, plunging into the water, feel a sudden chilliness that is alarming and dangerous. In such cases, the injury is generally imputed to going into the water too warm; whereas, in truth, it arises from going in too cold.

“ But though it be perfectly safe to go into the cold bath in the earlier stage of exercise, nothing is more dangerous than this practice after exercise has produced profuse sweating, and terminated in languor and fatigue; because, as has been already repeated more than once, in such circumstances the heat is not only sinking rapidly, but the system parts more easily with the portion that remains.”

In these judicious observations, the discrimination of the two states of the body is properly and accurately made: in the one of which, when the temperature of the body is at the highest point, cold bathing will be useful and salutary; while in the other state, when the body is in some measure cooled down below its ordinary temperature, the same practice will infallibly prove hurtful.

The proper condition of the body for using the cold

bath, may be easily ascertained by a simple experiment in partial bathing. Let any one, after the face and hands have been exposed for some time to cold air, bathe them in cold water, and observe the effects. Instead of the agreeable sensations and fine glow of heat which even this partial application of cold water usually produces, a chilliness and shrinking of the skin, as it were, succeed, diffuse themselves over the body, and continue even for a considerable time; unless, with the view of exciting the natural heat, recourse be had to artificial heat or violent exercise. This experiment may be varied by exposing one hand to cold, and keeping the other in a warmer medium, and then bathing both hands in the same cold water for the same length of time: the hand whose temperature was reduced by the cold, will experience unpleasant and chilly sensations, while the sensations of the other will be warm and agreeable.

The popular opinion, that a sudden transition from a warm to a colder medium, when the body is heated, or even in a state of perspiration, is followed with dangerous consequences, is founded on incorrect observation and erroneous notions of the nature of the living powers. How rarely does it happen that any bad effects are produced by going into the open air at the temperature of freezing, or even some degrees below it, after being in an apartment heated to 60° , or sometimes nearly to 70° ? Catching cold, as it is called, is indeed often ascribed to this cause, and is supposed to be the consequence of exposing the body to the sudden alternations of heat and cold. But it ought to be considered what has been the previous state of the body; and if this be attended to, it will be found that the cough, hoarseness, and feverish symptoms, which come under the denomination of a *cold*, and are ascribed to exposure to cold, after being for some

time in a warmer medium, are induced only after profuse sweating in the bustle and agitation of a crowded assembly, and when the body is exhausted by fatigue and enfeebled by languor.

The Roman youth, in the midst of the most violent exercises, plunged into the water, and swam sometimes oftener than once across the river; and all this with the most perfect impunity. But it is to be particularly remarked, that this immersion in cold water did not take place when the body was debilitated by exertion, and cooled by profuse and long continued perspiration; but while its vigour was little wasted, and the heat was above the natural temperature.

The peasants of Finland exhibit, in the use of the vapour bath, one of the most remarkable instances of the instantaneous transition from wide extremes of heat and cold; and so far from suffering any inconvenience or injury from this practice, it seems to be followed in some measure as an amusement. The vapour bath, which is employed in that country, is heated to the temperature of 160° Fahrenheit, and even sometimes higher. In this bath, and at this high temperature, the peasants often remain for half an hour, and sometimes for the space of a whole hour; during which, in the winter season, they frequently go out of the bath quite naked, and roll themselves in the snow, when the temperature of the external air is so far below the freezing point as to give a number of degrees equal to 180° , or equal to the distance between the boiling and freezing points. They even come out from the bath, still naked, and converse together for some time in the open air, and sustain no injury whatever.

In one word, the proper condition of the body to have the full benefit of the cold bath, is when the heat is

preternatural, whether this has been induced by exercise or otherwise ; and even no danger need be apprehended by going into the water when a slight perspiration prevails. On the contrary, the diminished heat of the body, and particularly when it is exhausted by fatigue, and in a state of languor and debility, and, in short, when the vital energy is reduced, ought to be regarded as necessary precautions to avoid cold bathing.

SECT. 3. *Of the Proper Mode of using the COLD BATH.*

IT might seem at first sight an useless discussion to enter into the consideration of the mode of bathing, where nothing more appears necessary than the immersion of the body. But if some of the circumstances connected with this immersion be overlooked or neglected, it will be found that the advantage expected from cold bathing will be greatly diminished ; or, instead of being a salutary, it will prove, as it has often done, an injurious practice. If, for instance, much time is occupied in undressing or preparing for immersion, and if the bather remain too long in the water, bad effects will infallibly follow, and may lead to the supposition, that the use of the cold bath, being uncongenial to the constitution, must therefore be abandoned ; and thus the benefits to be derived from it under proper management are finally relinquished. To prevent such disappointment, and with the view of having all the advantage from cold bathing properly regulated, it is proposed, in the present section, to consider what should be done previous to bathing, the time of remaining in the water, and the future management.

It will be recollected, from the observations already adduced, that the great object in the practice of bathing

is to preserve the temperature of the body undiminished. Any deviation from the rules and precautions which have this object in view, will undoubtedly be prejudicial, and ought therefore to be guarded against. With this idea impressed on the mind, it will not be necessary to enter into any long detail in discussing the points above alluded to.

Having by previous moderate exercise, or otherwise, increased the temperature of the body, so that it feels warm and comfortable, and having reached the spot for bathing, the clothes should be stripped off as quickly as possible; and that no time may be lost, it might be a proper precaution, where it can be conveniently observed, to have the dress of such a nature that it could be easily and expeditiously removed. To remain for any length of time in a state of half preparation, as it were, with part of the clothes laid aside, must, it is obvious, reduce the temperature of the body, and bring it to that state when bathing should be carefully avoided. If, even during the heat of summer, the body while half undressed is exposed to the open air, it will, in a much shorter time than is usually imagined, be so cooled, that bathing afterwards will not be attended with the salutary effects expected from it, and sometimes the consequences may be prejudicial. The last, it seems extremely probable, is not unfrequently the case, from inattention to the circumstance now under consideration. The moment, therefore, that undressing is finished, and this should be performed as expeditiously as possible, the body should be immersed in the water.

Many who have been little accustomed to the use of the cold bath will recollect, from their own experience, that the apprehension of the shock on first entering the water, or the feelings of repugnance to encounter it which

begin to operate powerfully in preparing the body for bathing, occasion no small delay at this time. But such apprehensions and feelings are extremely hostile to the beneficial effects of the cold bath; and even, independent of the hesitation and delay thus induced, the strong aversion which is excited is not without its effect in frustrating the ends of cold bathing. It becomes necessary, then, by an exertion of the mind, to conquer and suppress such feelings, which, like other emotions, gain strength by indulgence, and become at last habitual and troublesome companions; and to keep the benefits of the practice full in view, seems to be the only successful way of obtaining this victory.

Being prepared for going into the water, the proper length of time for remaining in it is now to be considered; and with regard to this circumstance, the practice of bathing, as it is commonly conducted, is most erroneous and hurtful. This point may be easily and satisfactorily settled by experiment. Let any one take a single immersion in the cold bath, and let the time he remains in it not exceed a minute or two; let him then observe the effects which follow. Let the same person, at another time, when he wishes to use the cold bath, continue in it for eight or ten minutes, as is the usual practice; and during this time, let him alternately plunge into the water and expose the body to the air; he will now experience very different effects. The first case will be followed by an agreeable sensation of warmth, or a glow of heat over the body, which may be regarded as a sure test of the utility and benefit of cold bathing, as well as by an increase of muscular vigour and hilarity of spirits; but in the last case, chilliness and shrinking of the skin, diminished vigour of the muscular powers, general lassitude, and not unfrequently headache and depression of

spirits, with a variety of unpleasant sensations, which no exertion during the rest of the day can drive off, are the certain consequences of remaining too long in the water.

The good effects of cold bathing, it ought to be observed, depend on the sudden exposure of the body to a medium colder than itself, by which a certain quantity of heat is abstracted, and the consequent reaction, as it is called, or exertion of the animal functions, to restore to the body that degree of heat of which it has been deprived. Now these effects are directly counteracted by remaining too long in the water, and still more so by repeated immersions. Every time that the body is placed in a medium colder than itself, it is necessarily robbed of a new portion of heat. But in the intervals of the immersion, when the body is exposed to the air of the atmosphere, another and a considerable portion of heat is carried off, in consequence of the evaporation of the water from the surface of the body ; so that it is by this practice cooled down, as it were, or deprived of a greater portion of its heat than the vital functions can in a short time recover ; and hence the sensation of chilliness and other disagreeable feelings which are thus induced.

These bad effects will be in some measure obviated by keeping the body immersed in the water during the whole time that the bathing is continued, so that no part of the heat shall be carried off by evaporation. These effects, too, are still farther obviated by the practice of swimming. Those who have acquired this art should never fail to practise it while they remain in the water ; for beside the uninterrupted immersion of the body, the requisite muscular exertion in swimming tends greatly to keep up the balance of temperature which is lost by placing the body in a medium so much colder than itself. But the safe and obvious rule is, to remain only a very

short time in the water : at least those who have a delicate constitution, or who wish to insure all the salutary effects of cold bathing, will do well to observe it strictly. The length of time, indeed, may be in some degree regulated by the season of the year and the temperature of the water. When the season of the year is mild and the water not cold, the period of immersion may, without much risk of danger, be protracted ; but when the air is keen and sharp, and the temperature of the water is greatly reduced, the time of remaining in it ought to be very short.

Here it is proper to notice another singular error which has crept into the practice of bathing, and which has received countenance and support from some medical writers. According to this erroneous opinion, it is said that the head should be immersed, as well as the rest of the body, immediately on going into the water ; and the reason assigned for this practice is, that the accumulation of blood in the head, with all its direful consequences, which would take place by neglecting this precaution, may be prevented. Without entering into any physiological discussion on this point, which is far from the object of this treatise, it may be asserted, that no such repulsion to the head, or accumulation of blood, ever happens without exhibiting the terrible symptoms of a violent disease ; so that in the view of warding off an attack of this disease, no danger from the omission of wetting the head need at all be apprehended. On the contrary, it seems to be extremely probable that many of the bad effects which are ascribed to cold bathing, and which have forced many to abandon it, who were anxious to persevere in its use, derive their origin from this very practice, which common opinion has sanctioned and recommended. And, indeed, what hurtful consequences may not be ex-

pected from the impression of the water on such delicate and sensible organs as the eye and ear, while at the same time it enters the mouth and nose, threatening suffocation. Every person who plunges headlong into the water will recollect the partial stupor and unpleasant sensations which are thus induced, and would probably forego this most violent outrage on his feelings, were it not from a strong conviction of the utility of the precaution. As a proof that no advantage is gained by immersing the head, it is a very common practice with many bathers to put on a cap when they go into the water, so that it is prevented from coming into contact with the head; and no inconvenience is ever complained of as arising from this practice. But let those who are not strongly prepossessed in favour of wetting the head, put the matter to the test of experiment; there will be little doubt of the result, when a comparison is made with the comfort and agreeable feelings which the bather will enjoy by avoiding this violent practice of total submersion, and the tingling ears, blinded eyes, and partial suffocation, which are occasioned by suddenly plunging the head under water. In one word, the benefits of the cold bath will most assuredly not be diminished by entirely omitting this practice; but if those who are eager to indulge in it, from an impression of its utility, feel no inconvenience or bad effects from it, they may persevere.

With regard to the management of the body after bathing, little need be said. Having remained the proper time in the water, the bather should leave it as quickly as possible, and he should be equally expeditious in drying the body with a cloth. When this is done, he should speedily resume his usual dress; and if convenient, it will be found useful to take moderate exercise. By this management, if the body has not been too long in the wa-

ter, and is thus too much cooled down, a glow of heat will soon diffuse itself over the surface, indicating that the proper and salutary effects of bathing have been induced. In case, however, from delicacy of constitution, any chilliness, or other unpleasant sensations, should remain for any length of time after leaving the bath, it may be beneficial for those who bathe before breakfast to sit down as soon as convenient to that meal; and for those who do not bathe till some time in the forenoon, to take some warm soup, with the view of restoring the heat, and along with it the vigour of the body.

The observations which have now been offered relate to cold bathing in general. It may here, however, be proper to add, that although there is not the smallest doubt of the beneficial effects of every kind of cold bath, yet where there is an opportunity of enjoying it, bathing in sea water is always to be preferred: and in fixing on the best situation for the purpose of bathing in the open air, and reaping all the benefit to be expected from it, whenever a selection can be made, the warmest and most sheltered should be chosen. Those, therefore, who have occasion to resort to the sea-side for the purpose of bathing, will do well, when it is in their power, to choose a place which is protected from the prevailing winds on that part of the coast. The propriety and advantage of this choice must be obvious; for, besides that bathing in such a situation will at all times be more comfortable, it may not only be continued with less interruption when the state of the weather would render it in more exposed places impracticable, but the period of the bathing season may, from local circumstances, be protracted: and it ought to be recollected, that these are advantages of no small value. Bathing is not to be expected to operate as a charm. Like many other safe and efficacious reme-

dies, the utility of which depends on the regularity, constancy, and perseverance of their application, it will in many cases require to be long and steadily continued before its beneficial effects can be fully recognized. It must, therefore, in this view, appear to be of material importance, that bathing, after it has been begun, should be carried on without interruption while it shall be deemed necessary to persevere in its use.

But the benefits of cold bathing are still farther improved where an opportunity offers of enjoying these benefits within doors; and at the same time it may be added, all the inconveniences of bathing in the open air, by which its salutary effects are often directly counteracted, are thus entirely avoided. Here the temperature of the air and of the water may be uniformly kept up nearly at the same degree; from the accommodations provided in buildings appropriated to this purpose, no time need be lost in undressing previous to bathing, or in dressing after it; and some time may be allowed to elapse before going into the open air, till the body has recovered its usual condition, and the glow of heat indicating the good effects of bathing begins to diffuse itself over the surface.

Before proceeding to the consideration of the diseases in which cold bathing is found beneficial, it may be worth while to bring into one view what has been said with regard to its proper use.

Concise Rules, founded on the preceding Observations, which should be followed in using the COLD BATH.

1. Persons of a delicate or feeble constitution should not bathe in cold water early in the morning; by others, any time in the early part of the day may be chosen for this purpose.

2. Cold bathing should never be employed unless the temperature or heat of the body is by exercise, or otherwise, somewhat increased, or even when a slight perspiration has begun.

3. When the body has been long exposed to exertion and fatigue, or after profuse sweating, when lassitude, debility, and chilliness prevail, the use of the cold bath should be dreaded and shunned.

4. When the body is in a proper degree of heat, undress as quickly as possible, and immerse it in the water.

5. To have the greatest benefit from cold bathing, remain a very short time in the water, not exceeding a minute or two, and during the whole time keep the body under the surface of the water.

6. On coming out of the water, wipe the body dry with a cloth, and resume quickly the ordinary dress.

7. After bathing, use moderate exercise to promote the return of the heat of the body, taking care that it be not violent or too long continued.

8. If chilliness partially or generally prevail, take breakfast after bathing in the morning; or in the forenoon, some warm soup.

SECT. 4. *Of the Diseases in which COLD BATHING may be useful.*

IT is not the object of this Treatise to give a full and detailed account of all the symptoms of the diseases in which beneficial effects may be expected from the use of the cold bath. For as it is addressed to those who are not supposed to be familiar with all the deviations from the healthy state to which the body is liable, such a discussion would not only be useless, but being misunder-

stood, might be injurious. Such being the case, it is proposed to point out briefly those complaints only in which cold bathing is obviously useful, and in which there is no danger of mistake or misapprehension, even with the least discerning. Wherever any doubt or difficulty arises with regard to the utility or safety of the application, recourse should be had to the opinion of an experienced medical practitioner.

Fever.—The use of the cold bath in fever, it would appear, has been long known among different nations; but the practice has been revived by the late Dr Currie of Liverpool, and its utility has been proved and supported by a great body of illustration*; and it may be added, wherever it has been pursued with judgment and vigour, the most beneficial effects have followed, either in stopping the progress of fever entirely, abridging its period, or moderating the violence of its symptoms.

The affusion of cold water, rather than immersion, has been most generally employed; and as it is the speediest mode of application, it ought always to be preferred. But whatever shall be the mode adopted, the same cautions and rules which have been given to regulate the practice of cold bathing in general, should here be still more rigidly observed. These rules are, that it should be employed only during the hot stage of fever, when the heat of the body is preternaturally increased, when there is no chilliness present, and when the sensible perspiration is not general or profuse. It is of the utmost importance to attend to these circumstances. The hot fit of fever usually comes on in the afternoon or evening; and it is generally marked by restlessness, flushing of the

* See Medical Reports, 1804.

face, and increased thirst ; and the heat of the body, as indicated by the thermometer, will be found to be one or two degrees above the average heat of the fever. While these symptoms prevail, which is commonly between six and nine in the evening, the affusion of cold water is safest and most beneficial.

But if this application be made during the cold stage, very different effects will follow. A temporary suspension of respiration is induced, the pulse is frequent and feeble, and the surface of the body, as well as the extremities, becomes colder and shrivelled. This remedy, therefore, should be cautiously avoided when any considerable degree of chilliness prevails, even although a greater heat than usual is indicated by the thermometer applied to the trunk of the body.

The use of the cold bath should also be avoided in fever, when the heat of the body is less than usual : it should be avoided, too, when the heat is only equal to the natural standard, even although no degree of chilliness should prevail. As this sometimes happens in the last stage of fevers, this discrimination ought to be carefully made.

It has been already hinted, that immersion in the cold bath may be useful and salutary when the body is under moderate perspiration, and especially when this perspiration has been excited by exercise ; and indeed this is recommended as a proper and necessary preparation for the use of the cold bath. But in feverish disorders, when profuse sweating has come on, and especially after it has continued for some time, the affusion of cold water should then be avoided ; for instead of being beneficial, it would undoubtedly at this time be highly pernicious. By means of profuse perspiration the body is rapidly cooled, and thus it is brought to that state in which the use of the cold bath, as has already been shown, would be extreme-

ly improper. It may then be adopted as a general rule, which should be rigidly observed, that the cold bath should not be resorted to in all cases where profuse sweating has been of any considerable duration; nay, it should not be employed in such cases, even although the heat of the body may appear at the time to be preternaturally increased, and this increase of temperature may be indicated by the thermometer. For it will be found, that after sweating has flowed freely for some time, the temperature of the body will sink greatly when it is exposed to the cold air; and still more so, when it is subjected to the affusion of cold water or immersion in the cold bath*. Keeping, however, in view, the hints and cautions already given, the affusion of cold water may be employed at any period of fever: but the most beneficial effects may be expected from it when it is applied in the earlier stages; in the more advanced periods its application is more doubtful and precarious.

But as these observations are not intended for medical practitioners, by whose opinion and advice the propriety of using the cold bath in fevers, where nicety of discrimination is required, ought always to be regulated, it would be quite unnecessary to enter farther into detail on this point. Those to whom they are addressed will be at no loss, by observing the rules laid down, in what circumstances cold bathing may be effectually employed in those slighter feverish disorders which are characterised by increased thirst and heat of the body, headache, and general uneasiness; a combination of symptoms which, on their appearance, when they exist without any local affection, come under the denomination of having caught

* Currie's Medical Reports, i. 19

a *cold*. In such cases, and particularly when the general uneasiness and the other symptoms become more troublesome towards the evening, the cold bath, either by affusion or immersion, may be safely had recourse to, and its use will be followed with the most salutary effects. A single application in proper time has often prevented a severe and tedious illness.

The cold bath has often been peculiarly useful in removing a kind of slow, irregular fever, which is sometimes extremely troublesome to persons of sedentary habits, and particularly those whose pursuits require much attention and exertion of thought. Such habits are apt to induce anxiety of mind and irritability of constitution; and hence, without much deviation from the regular functions of the digestive organs, arise an impaired appetite, with a frequent pulse, a burning heat in the hands, and restless nights. A disorder of this kind, from the symptoms being at first slight, excites little uneasiness or alarm; but it often continues with irregular attacks for a long time, with little interruption to the ordinary business of life, excepting that it renders it irksome and fatiguing. If, however, nothing be done to retard its progress, or to mitigate its effects, the symptoms become gradually stronger and more confirmed, till at last the disorder, as has not unfrequently happened, terminates in hypochondriasis, or some degree of mental derangement.

A disease of this kind, originating in a relaxed and debilitated state of the constitution, admits only of being removed by restoring its usual tone and vigour. The cold bath, employed according to the rules and precautions laid down, will be found to be the most efficacious remedy that can be applied, not only in procuring relief from the symptoms, but what is of essential advantage, in preventing their recurrence. The rules and precautions ought

to be more rigidly observed in proportion to the delicacy and irritable state of the constitution, and consequently the advanced stage of the disease. Cold bathing should be had recourse to on the first attacks of the disorder; and wherever an opportunity offers of cold bathing in seawater, it should undoubtedly be preferred.

Intermittent Fevers.—Fever of this character, to which persons who have resided in warm climates, or in the fenny counties of England, are extremely liable, and which, if long protracted without relief, prove most harassing complaints, have been entirely removed by the use of the cold bath, even after every other remedy had been applied in vain. But it is proper to observe, that cold bathing should not be resorted to in fevers of this kind, till it has been ascertained that no affection or induration of the liver or other viscera has taken place. This is by no means a rare occurrence in those who have been long afflicted with intermittent fevers in tropical regions; and this being the case, cold bathing would be highly injurious.

Nervous Diseases.—Experience has shown that many of the diseases which come under this denomination have been greatly relieved, and sometimes have been entirely cured, by the proper use of the cold bath, and particularly by sea bathing. In such complaints, sea bathing is recommended by some highly respectable medical writers.

Palpitation of the Heart, Hypochondriasis.—In these diseases, which indicate general debility of the nervous system, and are therefore denominated symptomatic, sea bathing has been found greatly beneficial. Want of sleep, one of the most distressing symptoms which accompanies these complaints, is often removed by its use.

St Vitus's Dance.—This is another nervous affection,

which is often difficult of cure. Sea bathing has been found effectual in removing it.

Epilepsy and Convulsions.—In cases of epilepsy which have occurred previous to the time of puberty, and before the disease has been habitually confirmed, sea bathing has effected a complete cure. It has proved equally beneficial in convulsive disorders, to which children are often liable. But before the cold bath is employed, it will be found useful to administer a mercurial purgative, as calomel, for the purpose of clearing the bowels. Convulsions in children are often occasioned by the accumulation of slimy matter in the intestines; which latter is supposed to be in some measure owing to worms. This matter being carried off, the cold bathing will invigorate the system, and thus prevent its future accumulation. According to the experience of some eminent practitioners, the utility of the cold bath is most to be depended on, when it is employed in convulsive disorders, during the height of the fit.

Hysterical Affections.—During the time of a hysteric fit, it is found that dashing cold water suddenly on the face and neck, puts an end to it; and in such cases, in the absence of the fit, sea bathing has been resorted to with great benefit, from its effect in restoring the vigour of the system.

Chincough.—When this disease has continued a long time, it assumes what is called by medical writers the *chronic* form, when it is accompanied with a regular evening attack of fever, and wasting of the body. The beneficial effects of change of air, and especially of sea air, are well known in this disease; but after the cough has ceased, sea bathing may be resorted to with advantage, to recover the lost strength and vigour of body.

Nervous Headache.—Headache of this description most frequently depends on the disordered state of the

stomach and organs of digestion; and in many cases much benefit may be derived from sea bathing.

Rheumatism.—Sea bathing has been strongly recommended by some in that stage or species of rheumatism which, from its long duration, is called *chronic*. This species often succeeds the inflammatory stage of rheumatism. Here the joints are affected with painful and puffy swellings. But in such cases the utility of the cold bath seems doubtful, and therefore it should be resorted to with caution. When, however, the constitution is considered entirely free from the disease, sea bathing may be employed with the view of invigorating the system, and rendering it less susceptible of the operation of those causes which induce rheumatism.

Gout.—Cold bathing has been lately extolled by some as a safe and efficacious remedy, even during the height of a fit of this excruciating disease; while the practice has been loudly condemned by others. In a point of such moment, it would be rash to decide on doubtful grounds. It will, therefore, be prudent to wait till future experiment and observation have finally settled it. But with a view to strengthen the constitution, and to prevent the recurrence of the disorder, or at least to mitigate its severity, the cold bath, during the intervals of the fits, prudently managed, may be attended with much advantage.

Constipation of the Bowels.—Every person is aware how much the health is affected by any irregularity in the digestive or excretory organs. When the stomach and bowels are disordered, the whole system is deranged. Some cases of obstinate costiveness have occurred, which, after having resisted the most active internal medicines, have yielded to the simple remedy of dashing cold water on the lower parts of the body; but in less violent cases, sea bathing will be found beneficial in restoring the re-

gular action of the bowels. Persons of sedentary habits are peculiarly liable to disorders of this kind. To them, therefore, cold bathing will be highly useful in exciting the diminished action of the bowels, and in renewing the tone and vigour of the whole system.

Bilious Complaints.—Most of the complaints which are usually and indiscriminately ascribed to an excess or accumulation of bile in the stomach, are really owing to indigestion and general debility; and were this the proper place, it would be easy to show that such is the nature of the diseases which come under this general denomination. Unless therefore it appear, from attentive examination, that there really does exist some affection of the liver, the cold bath, and perseverance in its use, adhering strictly, at the same time, to a moderate and cooling regimen, and avoiding, if necessary, vegetable food, will be found singularly beneficial.

Sore Throat.—There are two diseases which, in common language, come under this denomination, and which, as they are characterized by distinct symptoms, may be easily recognized. In the one, the internal surface of the throat and breast is inflamed. This appears from the sensation of heat, soreness and rawness of the throat, which are accompanied with troublesome, frequent, and tickling cough, and sometimes with hoarseness. The first attacks of this kind of complaint of the throat are often successfully resisted by the topical application of the cold bath. Cloths dipped in cold water, and applied externally to the throat and breast, wiping afterwards with a dry cloth, and covering up with flannel, will often arrest the progress of the disease. But to those who are subject to such complaints, general cold bathing may be safely recommended as a simple and efficacious remedy in preventing the recurrence of the disorder.

The other species of disease of the throat is accompanied with swelling and pain of the glands at the sides of the throat and under the jaw, and with difficulty of swallowing, especially liquid substances. In this species, when the inflammatory symptoms run high, suppuration is the consequence. Some persons, and especially those of a sanguine temperament, are peculiarly liable to the attacks of this kind of sore throat, during the variable state of the season on the approach of winter and spring; and to them cold bathing will be found highly useful. But it ought to be observed, that the cold bath is not here recommended during the attack of the disease. This might prove extremely hurtful, and therefore must be avoided. When, however, the symptoms have disappeared, it may be efficaciously employed in bracing the system, to enable it to resist the operation of the causes which are apt to induce this troublesome and painful disorder.

What has been called *apbthous* sore throat, is considered also as a peculiar species. Persons of a delicate constitution, who reside much in crowded cities, are liable to this species, which is characterized by a sallowness of complexion, listlessness, and aversion to exertion, relaxation of the uvula, and somewhat of a honey-comb appearance of the glands in the inside of the throat. Cases have occurred, in which this disease has been induced by anxiety of mind; and in others, most frequently in females, it is occasionally attended with a total loss of voice, which sometimes suddenly supervenes. Sea bathing has been here found beneficial; but it has sometimes happened, that the disease has recurred on returning to town and former occupations. This recurrence might perhaps be prevented by persevering longer in sea bathing; or, if this cannot be conveniently accomplished, by having re-

course to the use of the cold bath, in fresh water, within doors.

Inflammation of the Eyes.—The most decided experience might be adduced of the beneficial effects of cold bathing in certain stages of inflammation of the eyes. When, indeed, the inflammatory symptoms, such as the pain, swelling, and intolerance of light, are violent, it is scarcely necessary to observe that cold bathing ought not to be employed. But when these symptoms have abated, sea bathing will be found the most efficacious remedy in removing the weakness which is the consequence of such affections, and which not unfrequently becomes habitual and extremely troublesome:

Scrophula.—Of the benefit to be derived from cold bathing in scrophulous affections, much doubt may be entertained. No remedy, indeed, has been more generally resorted to; so that any hint which seems to controvert a fashionable practice will be received with hesitation. When the disease has assumed an active form, when any of the glands, which are the seat of this disease, exhibit symptoms of inflammation, as swelling, redness, pain, and tendency to suppuration, and when suppuration or ulceration has actually commenced, the use of the cold bath ought most assuredly to be laid aside. But persons, especially in the earlier periods of life, who are constitutionally affected with scrophula, or have this peculiar habit of body, will certainly receive great benefit from sea bathing, before the disease has appeared in swellings of the glands of the neck, or of the joints; which latter is usually termed *white swelling*. In such cases, cold bathing, with a generous regimen and moderate exercise in the open air, may be safely recommended as proper and useful with the view of invigorating the system.

Rickets.—Sea bathing is highly beneficial in this dis-

case; and is considered by some as the best and most efficacious remedy in strengthening the constitution, and thus enabling it to resist the tendency to the disorder.

Female Complaints.—Cold bathing is undoubtedly useful in many disorders to which females, at different periods of life, are subject. But here some discrimination is necessary to ascertain when it may be safely and beneficially resorted to, and when it ought to be avoided.

In chlorosis, which comes on about the time that the constitution of the female is approaching to maturity, much benefit may be expected from cold bathing when it is judiciously directed; and those who experience its invigorating and refreshing effects should persevere in its use: but to those who have a pale complexion, a feeble pulse, and a languid habit of body, accompanied with slight swelling of the extremities, the cold bath is usually hurtful. The utility of the warm bath, in such cases, will be afterwards noticed.

Excessive menstrual discharges, and others of a similar nature, are often checked by the proper use of the cold bath. The tendency to abortion, connected perhaps with irregularity or excess in these discharges, or arising from peculiar habit or delicacy of constitution, will be obviated by sea bathing; and, indeed, the cold bath may be not only safely but beneficially employed during the whole period of pregnancy, by those who have been accustomed to its use from the beginning.

Debility of Constitution from long Courses of Medicine.—After a long course of mercurial medicines, the strength and vigour of the body are greatly reduced. Sea bathing has been found, from experience, to be a more efficacious remedy in obviating and removing the weakness and irritability which are induced by the use of such active medicines, or occasioned by the disorders for which they

are administered, than any means which has yet been applied. The only precaution to be observed here is, that in cases where mercurial medicines have been exhibited, their effects should be allowed to pass off before recourse is had to the cold bath, otherwise its use might prove injurious rather than beneficial.

CHAP. II.

OF WARM BATHING.

THE warm bath, as has been already observed, was greatly employed as a luxury by the Greeks and Romans. In the more degenerate days of the latter people, it became so prevailing and attractive a gratification, that it seems to have become a serious object with the emperors to erect immense buildings for this purpose, with the view of acquiring popular favour. The ruins of some of these splendid establishments, which exist at this day, excite the wonder and admiration of every traveller. Of these, the baths of Dioclesian, it is said, exceeded all the others in magnificence and extent. Those of Caracalla, according to some authors, were so large as to admit, conveniently, not fewer than 1800 persons to bathe at the same time.

Water heated to a proper temperature is most generally employed for warm bathing. In some countries the vapour bath is preferred. This kind of bath was greatly used by the ancient inhabitants of Mexico, as well as by their descendants at the present day. The vapour is obtained by throwing water on heated stones, in a kind of furnace or close apartment, in which the person who

uses the bath stretches himself on a mat*. A vapour bath, somewhat similar, is in use among the peasants of Finland†. The vapour bath is also a frequent luxury among some of the Eastern nations.

In this country, except for topical affections, water is solely employed for the purpose of warm bathing; and from its having become, in different parts of the world, both in ancient and modern times, an idle and luxurious enjoyment, an unfavourable opinion has long prevailed of its utility. But at present, the benefits which have been derived from the warm bath seem to have produced a different impression on the public mind; and the numerous accommodations which have of late years been established, and to which crowds annually resort, show that it is not regarded merely as a luxury; and indeed, when the benefits obtained from warm bathing are better known, there can be no doubt that a practice so salutary will be facilitated and extended. Here, then, it may be worth while to consider, 1. The effects of the warm bath on the living body; 2. The temperature and time of using it; and, 3. The diseases in which it is found beneficial.

SECT. 1. *Of the Effects of the WARM BATH on the Body.*

THE first sensible effect of the warm bath on the body is the sensation of warmth; and this effect is perceived although the temperature of the water be some degrees inferior to the heat of the body. This sensation of warmth is no doubt partly excited by the increased heat of the water, in which the body is immersed, above that of the air of the atmosphere. This effect follows when the

* Clavigero, Hist. of Mexico, i. 429.

† Acerbi's Travels.

water is heated a little above 90° , which is considerably below the heat of the body ; and it has been proved, by experiment, that it is not merely dependent on the change of the medium, and the relative temperature of the air and water, but that there is a real increase of heat. In a short time after immersion in water heated to 93° , the thermometer, previously introduced into the mouth, when it stood at 98° , was observed to rise to 100° . After a quarter of an hour had elapsed, during which time the temperature of the bath remained stationary, the thermometer fell to 98° , and stood at that degree while the experiment was continued. The following explanation has been given of these phenomena. The heat of the body is regulated by the process of transpiration, or secretion from the skin ; but this process is for a time interrupted, while the body is completely surrounded by a dense medium like water ; and while this interruption continues, the heat of the body is accumulated, which augmented heat is indicated by the thermometer : but when the balance of the powers, which have operated this change, has been restored, the heat of the body returns to its former standard.

The warm bath also affects the respiration. During the immersion the respiration is observed to be somewhat slower than usual. This retardation is ascribed to the increase of weight of water to be displaced during each inspiration, so that some degree of voluntary effort is required to elevate the ribs and distend the chest ; but on the cessation of this exertion, the chest, by the additional weight of the water, rapidly subsides, and forces the air suddenly from the lungs. From this, it would appear that the inspiration only is retarded, and that the expiration is accelerated. But may it not be suspected that experiment and observation are still wanting fully to verify

these facts? and that this change in the respiration, in consequence of immersion in warm water, is owing to some other cause?

The effects of warm bathing are not to be limited entirely to its preventing the escape of heat, and thus producing an accumulation in the body. It has been clearly ascertained that there is a copious and constant secretion going on from the surface of the body. In a set of elaborate experiments which were conducted by Seguin and Lavoisier; the nature of this function has been particularly investigated, and the relation between the secretion from the lungs and that from the surface of the body determined: It will perhaps be considered as a curious piece of information to state the whole quantity transpired, on an average, from the lungs and the surface of the body, in a man not using laborious exercise, as it was ascertained in the above experiments. This quantity amounted to 18 grains every minute, 2 oz. 2 dr. every hour, and 54 oz. in the course of twenty-four hours, taking the rate of the quantity thrown off to be always the same. But this quantity, it must be observed, is liable to considerable variation with regard to diminution and increase from increased or diminished exercise and heat.

A very general opinion had prevailed previous to the experiments above alluded to, that part of the fluid was absorbed by the pores of the skin during the immersion of the body in warm water; so that, by impregnating baths with substances of a nutritive quality, it was supposed that life might be supported when the stomach, from disease, could not admit or digest the proper quantity of food. But it has been clearly and fully proved, that no such absorption or inhalation takes place by the skin while the external cuticle remains unimpaired.

These experiments have been mentioned for the purpose of stating some conclusions of considerable practical utility, which may be obviously deduced from the facts thus established. From this view of the nature of the functions of the animal economy, the grateful feelings and renovated vigour, which are the result of warm bathing properly regulated, may be satisfactorily accounted for. The body, after immersion for some time in water, heated to such a temperature as not to quicken the circulation, was accurately weighed; and it was found that the quantity of matter perspired was only equal to about two-thirds of what would have been lost, had the same person remained exposed to the air for the same length of time. During immersion, it is to be observed, the access of air being prevented, the perspiration from the skin is thus suspended, while that from the lungs goes on as usual. Not aware of this temporary suspension of the perspiration from the skin during immersion in the warm bath, the small loss of weight sustained by the body, while compared with what happens in the open air, may have misled less accurate observers, and brought them to suppose that an absorption of the fluid in the bath actually took place. Another fact admits of explanation from these experiments. It has been observed that thirst is alleviated by the immersion of the body in water. This is to be accounted for from the circumstance of the interruption of the cutaneous perspiration, and not on the supposition that any thing is received into the body.

It was found also by the same philosophers, that when the temperature of the water was raised so high as to accelerate the circulation, and increase the action of the exhalants to discharge their contents in the form of sweat, notwithstanding the density of the medium in which the

body was placed, and its consequent pressure on the surface, the loss of weight, even during immersion in the bath, was considerably increased.

From what has been stated of these curious experiments, it will not be difficult to conceive why immersion of the body, after being exhausted by exertion, in a bath heated to the temperature of 90° , or some degrees higher, should be so grateful and refreshing: for by its effects the immediate causes which produce debility and lassitude are removed; the waste of the matter perspired is checked; and the loss of heat, which so readily passes off from the body in that situation, is prevented. In this state of the body, the utility of warm bathing will be found no less proper, and its effects no less salutary, than immersion in cold water, as has been already shown, would prove hurtful.

It would lead into unnecessary discussion particularly to trace the history of warm bathing among the ancients, and of the abuses which afterwards crept into the practice; and which, perhaps, may have been in some degree the means of bringing it into disrepute even in modern times. It was originally employed for the purpose of refreshment after fatigue. Those who had been engaged in violent exercises, as was the case in some of the favourite amusements of the Greeks, found their exhausted vigour renewed, and their depressed spirits elevated, by immersion in the warm bath: but, from being an useful and invigorating practice, it degenerated at last into a mere luxury; and from the too frequent use of warm bathing, its effects, at the same temperature, as might be expected, gradually diminished: so that it became necessary, to have the same degree of enjoyment, to increase the temperature. The obvious consequence of this was, that the body was debilitated and relaxed, instead

of being refreshed and invigorated. At one period of the Roman republic, it was the duty of some of the public officers to see that the heat of the public baths was properly regulated before the people were admitted to them; but afterwards, when this beneficial precaution was neglected, it appears to have been no unusual thing to raise the heat of the water nearly to the boiling temperature. It is not therefore to be wondered at, that debility and disease should be the certain consequence of exposing the body to the action of heat in a medium so much higher than its own temperature. But these pernicious effects will be avoided by proper attention to regulate the temperature of the bath; and by this attention to the regulation of the heat, the practice of warm bathing, in consequence of the agreeable and salutary effects which may be obtained from it, will be more generally followed than it has hitherto been.

SECT. 2. *Of the proper Temperature and Time of Using the WARM BATH.*

ONE of the greatest abuses of the warm bath is that which has been mentioned above, and which was very prevalent in the degenerate times of the Romans. When the heat is too great, effects, the very reverse of what should be expected from it, take place; for then, instead of increasing, it diminishes the vigour of the body.

When the water is under the temperature of 90° , it scarcely comes under the denomination of a warm bath; but the increase of a few degrees of temperature above this point, will be found to produce a material difference in its effects on the body. When the heat of the bath is raised to 98° , which is about the temperature of the human body, it generally quickens the pulse; and it is

observed, that this effect follows when the water of the bath is at a lower degree of heat in the evening than before dinner. When it is proposed to excite perspiration by means of the warm bath, the heat should be gradually increased during immersion, till it is raised to the temperature of 100° . At this temperature the pulse will be accelerated, and the increased perspiration will appear in the face ; and this, should it be thought necessary, may be kept up for some time, by going immediately from the bath to a warm bed.

It ought to be recollected, that the sensation of warmth depends on the relative change of temperature to which the body is exposed ; so that the senses ought not to be trusted in regulating the heat of the water employed in warm bathing : for if one part of the body has been some time in a cold medium, water at a low temperature will feel warm, while another part of the body exposed to a warm medium, when immersed in the same water, experiences the sensation of cold. This shows the propriety, and indeed the necessity, of regulating the temperature of the bath by means of a thermometer. The neglect of this precaution has sometimes occasioned serious accidents ; for the body can bear a degree of heat which will produce hurtful consequences if it be gradually increased, and even with an increased sensation of pleasure. One case is on record, of the effects of inattention to the regulation of the temperature of the warm bath by the thermometer. A gentleman, to whom warm bathing had been recommended, experienced a very agreeable sensation after immersion ; and not aware of the danger of increasing the temperature, added more warm water, with the view of increasing the pleasure : the consequence of which was, from the excessive heat of the bath, that the circulation was accelerated, and a slight paralytic affection was induced.

The best and most obvious rule that can be given for regulating the warm bath, except in cases where it is to be employed with a particular view, is, that the heat should never be so great as to accelerate the circulation, or quicken the pulse. It has indeed been asserted by some writers on warm bathing, that the frequency of the pulse is uniformly reduced in a bath whose temperature does not exceed 96° ; but it seems probable that this position is susceptible of considerable variation from different circumstances; such as peculiarity of constitution, and the time of the day when the bathing is employed.

It appears, from general experience, that the most beneficial effects may be expected from the use of the warm bath at a temperature between 90° and 95° . At this temperature, it seems to be fully ascertained that it may be used with much advantage and with perfect safety; and, excepting with some particular view, it ought never to be resorted to at a higher degree of heat, otherwise there is considerable danger from its stimulating effects: and, indeed, it is extremely probable that the debilitating or relaxing effects of the warm bath, as they have been denominated, with some degree of opprobrium, have arisen from inattention to the proper regulation of the temperature. Perhaps, too, some of the bad effects which are ascribed to warm bathing, may have been produced by employing it at an improper time of the day.

Daily experience shows that the circulation, even in persons who enjoy perfect health, is considerably accelerated towards the evening. It is of little importance to inquire, whether this augmented circulation, and increased frequency of pulse, is to be ascribed to the stimulating effects of food, or to the debility which succeeds the exertions of the body during the day, or to the operation of both these causes. The fact, however, is certain, and its

application is obvious in regulating the use of the warm bath. If, then, warm bathing be resorted to in the evening, while the body is in this state of increased irritability, the tendency will be still farther to increase it; and hence it happens, that the warm bath employed late in the evening, has not had the effect of soothing and refreshing the system, and thus producing agreeable repose, but has been often followed by a watchful and sleepless night.

Keeping then this in view, the most proper time for the use of the warm bath seems to be about an hour or two before dinner. The warm bath is probably employed seldomer at this time of the day, from an erroneous opinion of the consequences, which suppose that the body, on exposure to the air, is more susceptible of catching cold; but this opinion is founded on inaccurate observation, and want of discrimination of circumstances. It is no unusual thing to induce feverish complaints by exposing the body to cold air after it has been heated and exhausted by exertion; but the state of the body is very different after immersion in the warm bath. When the body has been subjected to exertion and fatigue, the augmented perspiration rapidly diminishes its heat; but when it is placed in a medium about its own temperature, the heat is not only prevented from escaping, but it is perhaps accumulated: from which accumulation the body is better able to resist the action of cold after coming out of the warm bath: and in this view, there would be the same risk of catching cold by leaving a warm bed and going into the open air when the temperature is at 32° , as after immersion in the warm bath. No more danger need be apprehended in the latter than in the former case, which is too familiar ever to be the subject of a thought.

The proper time and manner of using the warm bath have occupied the attention of Count Rumford ; and an experiment, made with his usual accuracy on his own person at Harrowgate, affords so apt an illustration of the points under discussion, that it will probably be deemed worth while to quote it at length in his own words. “ Being at Harrowgate, he observes, on account of my health, I at first went into a bath, warmed to about 96° of Fahrenheit’s thermometer, every third day. At first, I went into the bath about ten o’clock in the evening, and remained in it from ten to fifteen minutes ; and immediately on coming out of it, went to bed, my bed having been well warmed, with a view to prevent my *taking cold*.

“ Having pursued this method for some time, and finding myself frequently feverish and restless after bathing, I accidentally, in conversation, mentioned the circumstance to an intelligent gentleman, who happened to lodge in the house, and who had been in the habit of visiting Harrowgate every year. He advised me to change my hour of bathing, and to stay longer in the bath ; and above all, to avoid going into a warmed bed on coming out of it. I followed his advice, and shall have reason all my life to thank him for it.

“ I now went into the bath regularly every third day, about two hours before dinner, and staid in it half an hour ; and in coming out of it, instead of going into a warmed bed, I merely had myself wiped perfectly dry with warmed cloths, in a warmed room adjoining to the bath ; and dressing myself in a bed-gown, which was moderately warm, I retired to my room, where I remained till dinner time, amusing myself with walking about the room, and with reading or writing, till it was time to dress for dinner.

“ The good effects produced by this change of method were too striking not to be remarked and remembered. I was no longer troubled with any of those feverish heats after bathing, which I experienced before ; and so far from being chilly, or being particularly sensible to cold on coming out of the bath, I always found myself less sensible to cold after bathing than before. I even observed repeatedly and invariably, that the glow of health, and pleasing flow of spirits, which resulted from the full and free circulation of the blood, which bathing had brought on, continued for many hours, and never was followed by any thing like that distressing languor which always succeeds to an artificial increase of circulation and momentary flow of spirits, which are produced by stimulating medicines.

“ I regularly found that I had a better appetite for my dinner on those days when I bathed, than on those when I did not bathe ; and also that I had a better digestion and better spirits, and was stronger to endure fatigue, and less sensible to cold in the afternoon and evening.

“ As these favourable results appeared to be quite regular and constant, I was induced to proceed to a more decisive experiment. I now began to bathe every second day ; and finding all the advantageous effects which I had before experienced from warm bathing still continued, I was encouraged to go one step farther, and I now began to bathe every day.

“ This experiment was thought to be very hazardous by many persons at Harrowgate, and even by the physician, who did not much approve of my proceedings ; but as no inconvenience of any kind appeared to result from it, and as I found myself growing stronger every day, and gaining fresh health, activity, and spirits, I continued the practice, and actually bathed every day at two o'clock in

the afternoon, for half an hour, in a bath at the temperature of 96° and 97° of Fahrenheit's scale, during thirty-five days.

"The salutary effects of this experiment were perfectly evident to all those who were present and saw the progress of it, and the advantages I received from it have been permanent. The good state of health which I have since enjoyed I attribute to it entirely *."

The authority of Dr Currie, whose attention has been so much occupied in considering the nature and effects of bathing, will be admitted to have great weight. The following quotation contains his sentiments on the temperature and time of using the warm bath: "The effects of the warm and tepid bath," he observes, "though more investigated (than the effects of the cold bath), are scarcely better understood; for perhaps there is no part of medicine on which so much has been written, and so little has been decided. These subjects are connected together, and might form, with great advantage, part of an experimental inquiry into the laws of animal heat. The commonly received opinion, that the warm bath relaxes and enfeebles the system, must, I apprehend, be admitted with many restrictions. Immersed in water or in air heated to the degree that quickens the circulation, we are doubtless speedily enfeebled: but by a heat short of this effect, it may be disputed whether debility is ever produced. The degree to which the bath must be heated in order to quicken the circulation, approaches nearly to that of the blood. In my own case, I have found the pulse become more frequent at 96° , when the stomach was empty, but at 94° after dinner; and the practice, said to have been

* Observations concerning the Salubrity of Warm Bathing.

adopted by the ancients, of going into the bath to relieve themselves from the oppression of an overloaded stomach, would appear to me to have been attended with some hazard, and with great inconvenience. It does not indeed appear how the desired effect was obtained, except through the means of profuse sweating. In future experiments respecting the effects of the warm bath, it will be of importance to observe the heat at which the sensible perspiration begins to flow ; which probably varies a good deal in different constitutions, and which, as it varies, will materially affect the results. It will be important also to notice the state of the stomach as to fulness, the condition of the pulse, the previous degree of exercise, and the actual heat of the surface ; all of which, according to my observation, will influence the experiments.

“ In all inflammatory diseases, it is of importance not to use the bath heated to the degree that materially quickens the circulation ; where this is not attended to, the symptoms are heightened, unless, indeed, a speedy and profuse perspiration ensues. In the degrees in which it does not quicken the circulation, the warm bath is soothing and sedative, especially when the immersion is prolonged ; and it is the temperature from 90° to 95° that is so singularly restorative after fatigue, though a still lower heat is safe and refreshing, as those who have used the baths of Buxton can testify.

“ The warm bath is frequently employed to excite a sensible perspiration, which may be prolonged after leaving it ; and in this way it may be used with great advantage. Where this object is in view, it is advisable to immerse the patient in the water heated to 94° or 95° , and very gradually and slowly to increase the heat to 97° , or perhaps 98° , watching its effects. When the sweat begins to appear on the forehead, if the pulse remains

calm, and the patient feels at ease, an increase of heat to 99° or even 100° may be ventured on with safety; should profuse perspiration be required: but when the bath is heated *in the first instance* to 100° , the stimulus of heat generally produces a feverish circulation, which the subsequent defective perspiration cannot allay. The injurious effects are still greater where the bath is heated at first to 105° or upwards; and sweat, instead of flowing more freely in consequence of the increased temperature, is discharged with greater difficulty; the stimulus of the heat, and the suddenness of its application, inducing a contraction of the orifices of the extreme vessels of the skin. In this respect, as in most others, the analogy is perfect between the stomach and surface; for it will uniformly be found, that sweating is excited more easily by draughts of tepid liquor, than an equal quantity of the same fluid swallowed as hot as it can be borne.

“ The sensible perspiration excited in the warm bath does not lower the temperature of the body while immersed; but being prolonged afterwards, it becomes powerfully refrigerant, and is a remedy of great efficacy: These observations, however, show the importance of regulating the temperature of the warm bath by the thermometer, and demonstrate how little dependence can be placed on the observations of those writers who speak of its effects without noting its temperature. A variation of two or three degrees, often impossible to be ascertained by the sensations, will not merely vary the degree, but alter the nature of its effects*.”

What has now been detailed, in the two foregoing Sec-

* Medical Reports, i. 283.

tions, on the nature, effects, and temperature of the warm bath, as well as the proper time for using it, may be summed up in the following concise rules.

Rules to be observed in using the WARM BATH.

1. When the bath is employed for the purpose of refreshment after fatigue, the temperature should never exceed 90° or 94° ; or it should never be so high as to quicken the circulation.
2. For the same purpose, the time of remaining in the bath should not be less than half an hour.
3. On coming out of the bath, the body should be wiped dry with warm cloths, and the usual dress resumed.
4. The most proper time of bathing is when the stomach is empty, or an hour or two before dinner. Never go to bed immediately after warm bathing.
5. The warm bath should never be used in the evening: for then it is apt to accelerate the circulation, and thus to produce feverishness and restlessness during the night.
6. When the warm bath is employed to produce sensible perspiration or sweat, go into it at the temperature of 94° or 95° ; gradually increase it to 97° or 98° ; or if profuse sweating be required, raise it to 99° or 100° , provided the pulse be not quickened.
7. When the perspiration appears on the face, the patient is to be removed to bed, after wiping the body, and there the sweating is prolonged while it is necessary.

SECT. 3. *Of the Complaints in which WARM BATHING is found useful.*

THE preceding observations on the nature and effects of the warm bath, will in some measure suggest its utility in various diseases ; and from a consideration of the nature of the disorder and the cure required, will show in what cases, and how far, it may be safely and beneficially resorted to. It will not therefore now be necessary to enter into any long discussion on the use of warm bathing as a remedy in disease. In what follows, it is proposed to state very briefly some of the complaints in which the warm bath is obviously useful ; but it may be worth while previously to notice some of the more general effects of warm bathing, as it is beneficial in the early periods of life, on the approach of old age, and on account of its detersive properties.

During the earlier periods of life, the warm bath, employed under proper regulations, would certainly be of essential service in promoting and invigorating the general health of the system. It would probably be no less useful in preserving the skin in that degree of softness and openness which are closely connected with a healthy state of the body. In many cases, too, from its action on the skin, warm bathing would no doubt tend to facilitate the progress, and by this means diminish the danger of various eruptive diseases to which the earlier stages of life are subject. This practice would infallibly be followed by very different effects from that which is too prevalent in this country, of immersing children by force into the cold bath or open sea, inducing such alarm and terror as often to excite convulsions.

The warm bath has been strongly recommended on the approach of old age, when the secretions and various other functions begin to be less active and vigorous. In such cases, it may be regarded as one of the most grateful enjoyments of declining life; supporting and renovating its diminished heat, and thus retarding, as it were, the progress of old age. On the utility of warm bathing, in this point of view, Dr Darwin has the following observations: "The story of Æson," he observes, "becoming young, from the medicated baths of Medea, seems to have been intended to teach the efficacy of warm bathing in retarding the approach of old age. The words *relaxation* and *bracing*, which are generally thought expressive of the effects of warm and cold bathing, are mechanical terms, properly applied to drums or strings, but are only metaphors when applied to the effects of cold and warm bathing on animal bodies. The immediate cause of old age seems to reside in the inirritability of the finer parts or vessels of our system; hence these cease to act, and collapse, or become horny or bony. The warm bath is peculiarly adapted to prevent these circumstances, by its increasing our irritability, and by moistening and softening the skin, and the extremities of the finer vessels which terminate in it. To those who are past the meridian of life, and have dry skins, and begin to be emaciated, the warm bath, for half an hour twice a-week, I believe to be eminently serviceable in retarding the advances of age*." The following anecdote of the practice of the celebrated Franklin, recommended to him by the same ingenious physician, is farther illustrative of the same opinion: "When Dr Franklin," says Dr Darwin, "the American philosopher,

* Loves of the Plants.

was in England, I recommended to him the use of a warm bath twice a-week, to prevent the too speedy access of old age, which he then thought that he felt the approach of; and I have been informed that he continued the use of it till near his death, which was at an advanced age *."

It cannot be doubted, that the warm bath may be highly useful, merely on account of its deterative properties; and when it is employed with this view, as a cleanser or purifier of the skin, the temperature may be regulated from 85° to 95°. When the secreted matters are allowed to collect and remain on the skin for any length of time, it is not without reason supposed, that by obstructing perspiration, they may thus give rise to different cutaneous diseases. It must therefore be of great importance to the health of the body, which depends so much upon the state of the skin, and the proper action of its vessels, to have all extraneous matters removed as soon as they are deposited on its surface. This is most effectually accomplished by the occasional use of the warm bath. It was a custom with the ancients to employ the leaves of the mallow, or the dry flower of a species of vetch, for rubbing the surface of their bodies while in the warm bath. Common bran, or what is known by the name of almond meal, might perhaps be used as a valuable substitute for the same purpose, and with equal effect.

Hectic Fever.—In the fever which comes under this denomination, the strength of the pulse is diminished, but it is increased in velocity; and these symptoms are accompanied with a falling off or wasting of the body. Here warm bathing will be found an efficacious remedy. Even the hectic fever which accompanies consumption, admits of a temporary alleviation by the use of the warm bath.

* Zoonomia, p. 686.

Chronic Weakness.—The symptoms which attend this complaint are a quick pulse, a shrunk or shrivelled appearance of the skin, and sleepless nights, without any local diseased affection: but such complaints, which frequently resist the effects of the most powerful medicines, receive great benefit from the use of the warm bath. Here it ought to be observed, that in this peculiarly irritable state of the constitution, cold bathing, being generally hurtful, should be avoided.

Spasmodic Cough.—This troublesome complaint, as well as other nervous affections, are often greatly relieved by the use of the warm bath. Even the partial application of warm water to the inferior extremities, has proved one of the best remedies in obviating or mitigating those convulsions which sometimes are induced previous to the eruption in diseases of this kind.

Colic Pains, &c.—In these severe complaints, the utility of warm bathing is not sufficiently known. It may be employed either generally or topically, and in both ways with great advantage. Warm bathing is also found highly useful in the species of colic which is occasioned by the poison of lead; and it rarely fails in proving beneficial, by mitigating the severity of the pain which is produced by the stoppage of biliary calculi in the duct of the gall bladder.

Gravelly Disorders, &c.—Great relief has been often obtained from the use of warm bathing in many of the affections of the urinary organs. The pain which is occasioned by the passage of gravel along the ureters, when it is interrupted by the spasmodic contractions of these organs, and even when it descends along the urethra, is greatly mitigated by immersion in warm water. The terrible pain which is produced during a fit of the stone is often moderated and relieved by the same means. It

may be added, that warm bathing will be of the utmost service in all the inflammatory affections of the kidneys.

Rheumatism, &c.—In that species of rheumatism which is not accompanied with fever or inflammatory symptoms, and which is called *chronic*, warm bathing has been often found so highly beneficial, that it may be regarded in some measure as a specific remedy against this harassing disorder. In some modifications of gout and palsy, the utility of warm bathing has been very considerable.

Fistulous Ulcerations.—In fistulous sores of the perinæum, which, from the peculiar state of the parts in which they are situated, are extremely troublesome and difficult of cure, much benefit has been derived from the use of the warm bath. It is recommended to continue the immersion in water, which is agreeable to the feelings, for an hour daily; and by this practice it appears, that the pain and irritation are greatly alleviated, and a disposition to heal is induced on the ulcerations.

Obstructions.—In cases of suppression or irregularity of the menstrual discharge, which, from the irritable state of the system, is not unfrequently accompanied with hysteric affections, the most beneficial effects may be expected from warm bathing.

Swelling of the Extremities.—The warm bath, it seems probable, may be employed with considerable advantage in cases of swelling of the legs, which are the consequence of the operation of causes that induce debility; and it has been recommended in all those cases where general debility exists, accompanied with cold extremities.

APPENDIX:
CONTAINING
A DESCRIPTION
OF THE
BATHS AT PORTOBELLO,
NEAR EDINBURGH.

IN contemplating the buildings which have been erected at Portobello for the accommodation of the public in the use of cold and warm baths, it is impossible not to advert to the train of circumstances which gave origin to this beneficial institution, and which finally led to its complete establishment. A town starting up in the course of a few years in the midst of a sterile solitary spot, annually extending its limits, and exhibiting all the elegance and comfort of modern improvement, is no frequent occurrence. The reader will not probably be displeased, shortly to trace its progressive history.

It is within the remembrance of many persons yet living, that the lands called *Figgate*, on which Portobello is now built, were a perfect waste, covered almost entirely with whins or furze. As a proof of the sterility of these lands, the whole, amounting to seventy acres, were let, not much above forty years ago, for 200 merks Scots of yearly rent, a sum little exceeding L.11 Sterling; but in the year 1762 or 1763, they were sold by Lord Milton to Baron Mure for about L.1500, and afterwards feued out by the latter to Mr Jamieson, at the rate of L.3 *per*

acre ; and such has been the rise of value, that some parts of the same lands have been lately disposed of at an yearly feu-duty of L.40 *per annum* for every acre*. The extraordinary rise in the value of these lands is less owing to the improved condition of the soil than to its local situation. The whole lands stretch along the sea-shore ; the soil is light and dry ; the sea-beach having a gentle descent, is smooth and fine ; and the waters of the sea, at a distance from any considerable stream, are unmixed, strong, and pure. These circumstances, so peculiarly favourable for sea-bathing, or summer quarters, with its vicinity to the metropolis, have long given Portobello a decided preference with the inhabitants of Edinburgh to every other place.

Portobello being thus marked by nature as a sea-bathing station, has been for many years greatly resorted to for this purpose ; and hence may be accounted for the unusual rapidity of its increase and extension. Were a person, after a few years absence, to revisit Portobello, he could not fail to be struck with the remarkable change on this spot, and might perhaps be somewhat at a loss to recognize what was formerly perfectly familiar to him. The tower, a fanciful imitation of a Gothic structure, which once formed the most prominent object here, and was seen at a great distance from sea and land, is now lost among numerous elegant buildings equally high, and laid out as commodious mansions, which are partly occupied by the proprietors themselves, and partly let out to hire, by the month or season, to strangers. Connected with many of these mansions are spacious gardens, under excellent cultivation, and well stocked with various kinds of fruit trees.

* Beauties of Scotland, Vol. I. p. 302.

This view, which exhibits a faithful picture of the rise, progressive improvement, and present state of Portobello, affords a striking instance of a pleasing change of a dreary and barren solitude converted into a cultivated and productive soil, which is covered with a numerous and increasing population. And this change is the more remarkable, when it is considered that it has been effected, by the labours of industry, on a spot which seemed originally destined only to furnish materials, from the strata of clay deposited under its sterile, sandy soil, for the manufacture of bricks, tiles, and coarse stone-ware ; for the purpose of which the first settlers were attracted to it. Some of these manufactures are yet successfully carried on, as well as some others.

The circumstances above stated rendering this place so desirable a retreat, and so favourable a situation for sea bathing, probably suggested to some intelligent individuals an extension of the accommodation which its natural advantages afforded ; and pointed out the utility of erecting a suite of buildings for the purpose of cold and warm bathing.

This hint was improved, a plan for the building was proposed, and the expence of executing the work was estimated. According to the original plan, contrived with much taste and judgment, and combining at once great elegance with the most perfect accommodation, ten baths were to be constructed ; two for the purpose of cold bathing, and eight for warm bathing. For the purpose of carrying this plan into execution, the gentlemen above alluded to, joined by others, formed themselves into a Society, under the name of "*The Portobello Bath Society* ;" the affairs of which are managed by nine of their own number, one of whom is treasurer and another is secretary.

The expence of erecting the whole suite of buildings, according to the approved plan, was estimated at L.5000; which was proposed to be raised by subscription, in shares of L.25 each. Beside his proportion of the profits, every holder of a share is entitled to use the baths at half price; and every holder of two shares has the same privilege free of all expence. A considerable sum was immediately subscribed; and soon after the building commenced, this sum amounted to L.1600. At present it exceeds L.3000.

As another proof of the improvement and extension of Portobello, it is to be observed, that the very spot on which the building is erected, seems to have been obtained from the domain of the ocean; and it is surely not a little gratifying to contemplate an establishment, which promises to be of great public benefit, formed in a place otherwise unproductive, or totally useless. The building commenced in October 1804; and it was carried on with such spirit and expedition, by the activity and exertion of the managers, that not many months had elapsed till it was as far completed as the extent of the funds would admit. But only one-half of the intended plan has been executed. This consists of one cold bath and four warm baths.

The cold bath is constructed of excellent freestone finely polished. The warm baths, which are fitted up with great neatness and elegance, are lined with polished marble, and are of such magnitude as to contain a large quantity of water; so that bathing here is not only commodious and comfortable, but the effects of it, from a great body of water being employed, are more uniform and permanent. Each of the warm baths has two pipes which communicate with it; the one for the purpose of conveying hot water from the boiler, and the other for

conveying cold water from the reservoir : so that in this way, and by means of a thermometer, with which each warm bath is provided, the water can be regulated to any degree of temperature that may be required. To each of the warm baths there is, besides, attached an apartment for undressing and dressing. This apartment has a fireplace, and is furnished with every kind of accommodation which any gentleman could wish to have in his own private apartments. But beside the ordinary dressing rooms, one of the apartments is fitted up with a bed and other conveniences, for weak and delicate persons, who may find repose after bathing proper or necessary. The bed-chamber will also be an agreeable accommodation to those who wish to promote and continue perspiration after the use of the warm bath, raised with this view to a higher temperature than for the purpose of ordinary warm bathing. It is almost superfluous to add, after so much attention has been paid to the convenience and comfort of bathers, that the water, every time it is used, is let off both from the cold and hot baths ; and after the baths have been completely cleaned out, in presence of the bather, a new quantity is conveyed to them.

The water with which the whole of the baths are supplied, is taken up at some distance within high water mark : so that it is not only of greater strength than what is nearer to the shore, which is diluted with the fresh water from the land ; but it is also more free from those impurities with which the water taken up nearer to the land is unavoidably mixed. This water is conveyed in pipes to a large reservoir, adjoining to the building, by means of machinery, which is driven by a horse ; and from the reservoir it is partly conveyed to the boiler and partly to the baths.

The baths are under the immediate management of 2

male and female keeper, who are required to give every proper and necessary service to the bathers. The fixed price for the use of the warm bath is three shillings, and one shilling and sixpence for the use of the cold bath. By a late regulation of the Committee, the warm baths, when not otherwise occupied, are permitted to be used as cold baths, at the price of one shilling.

The expence of frequent bathing, it is obvious, from the prices stated above, must be considerable; and this has been urged as an objection to the more general utility of the establishment. There is, it must be acknowledged, some weight in the objection; since the circumstances of many persons, to whom the use of the baths would be highly beneficial; in some measure preclude them from the enjoyment of this benefit. The Subscribers and Managers saw this limitation of the use of the baths: But when the great expence of erecting the buildings, the daily charges in keeping up the establishment, and the salaries of the necessary attendants, are considered, it will appear that the fees for warm bathing could not have been more reduced.

The Society, actuated by a generous humanity, have had it also in contemplation, as soon as their funds will admit, to erect a warm bath, with a dressing room attached to it, solely appropriated to the use of the poor; and accordingly this forms part of the original plan. When this part of the plan is executed, the Society propose to prepare and furnish the water for this bath; and they have no doubt that the public, satisfied of the utility of extending the benefits of warm bathing to the poor, will provide, by subscription, for the necessary expences of attendance.

One-half of the buildings only, it has been observed, has been finished; but this affords an excellent specimen

of what the whole, when completed, will exhibit, of a plan contrived with good taste, in simplicity and elegance of design, combined with the more essential objects of convenience and utility. Beside the internal accommodations already mentioned, when the original plan is executed, there will be a large public room for the use of the Subscribers, as well as of others who frequent the bath. At present the piazza, which extends the length of the building, and has a fine southern exposure, and therefore sheltered completely from the prevailing winds on this part of the coast, will afford to the invalid, even in winter, a very agreeable walk. The court-yard also, to the south of the buildings, is clean, dry, and spacious; thus affording ample room for admitting and turning carriages. At one end of the court-yard a stable is erected, for the accommodation of those who come to the baths on horseback; and a sedan chair is provided for the use of those who require to be carried to or from the baths.

With a view still farther to the convenience and comfort of the public, the Society have formed, on the south of the court-yard, an elevated terrace walk, which is agreeably ornamented with flower borders. This walk is perfectly dry at all seasons of the year, and it commands one of the finest and most extensive prospects in the vicinity of the metropolis. Almost the whole extent of the Frith is included in the view, with the ships and vessels passing up and down; the opposite shores of Fife, and the numerous towns and villages which skirt that coast; the southern shores of the Forth, and the rich, highly cultivated country on that side; with the towns, villages, elegant mansions, and ancient ruins, which are seen as far as the eye can reach.

Upon the whole, in contemplating this highly interesting and beautiful prospect, the elegance and taste display-

ed in the building, and the great utility to be expected from the establishment, the most indifferent can scarcely fail to acknowledge, that the public is much indebted to the spirited exertions of the Subscribers and Managers, for what has been already executed of the plan for its accommodation. And when the utility of the plan is fully known, the public, it cannot for a moment be doubted, will liberally come forward in encouraging and promoting the beneficial views of the Institution.



FINIS.

EDINBURGH:

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